

Application status of microorganisms in aquatic products



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Unreasonable farming behavior and expanding farming scale have caused great pressure on water quality, and the ecological environment of the farming system has been destroyed, resulting in increasing infection probability of bacterial and viral diseases. In order to eliminate diseases, some farmers overuse antibiotics, which disturbs the intestinal microbial flora of aquatic animals and has a great impact on the survival of aquatic animals and plants

As a new green preparation, microecological preparation can effectively reduce the content of some harmful substances in water and improve the health of aquatic animals. Microecological agents have gradually replaced the traditional additives in livestock and poultry breeding, and are also making great efforts in the aquatic industry.



Brief introduction of microecological preparations

Microecological preparations, also called live bacteria preparations, are specially used as live bacteria preparations for animal nutrition and health care by using microecological principles and probiotics or products that are beneficial and harmless to the host through special production processes. There are many kinds of products on the market, such as EM bacteria, photosynthetic bacteria, *Bacillus subtilis*, nitrifying

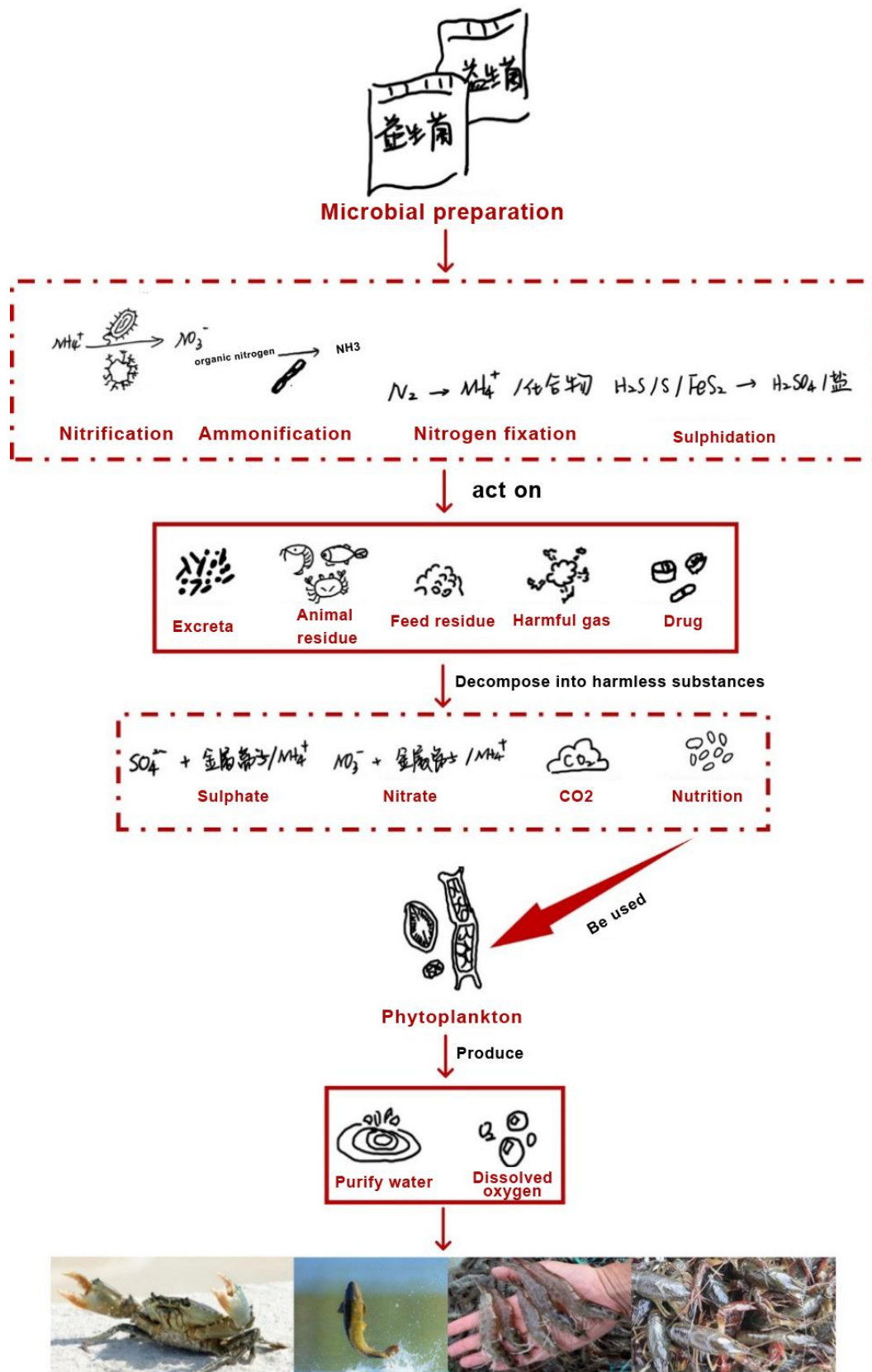
bacteria, lactic acid bacteria, yeast, etc., which are all similar products of microecological preparations.

China's Ministry of Agriculture announced that there are 12 kinds of feed-grade microorganisms allowed to be used, such as *Lactobacillus casei*, *Bacillus natto*, *Streptococcus lactis*, *Bacillus subtilis*, *Lactobacillus acidophilus*, *Saccharomyces cerevisiae* and *Rhodopseudomonas palustris*. According to the composition of strains, there are single strains and compound strains. Most of the strains sold in the market are compound strains, but there are some differences in the types and quantities of strains.

Application of microecological preparations in aquaculture

1. Improve water quality

As a water purifier, micro-ecological agents can effectively affect harmful flora and other toxic substances and remove humus in the environment. Through nitrification, denitrification, oxidation, ammoniation, sulfur and phosphorus removal, nitrogen fixation and vulcanization, animal excrement, animal residues, residual feed, harmful gases and chemical drugs can be quickly decomposed into harmless substances such as sulfate, nitrate and carbon dioxide. After the organic matter in water is decomposed, some nutrients will be produced to ensure the growth and reproduction of phytoplankton in water. Phytoplankton can produce a large amount of oxygen through photosynthesis, which can not only ensure the demand for oxygen during the growth and reproduction of cultured organisms, but also improve the water quality.



The research shows that increasing the content of *Bacillus subtilis* in water can effectively reduce the nitrite content and COD value, balance the pH of water, and purify and stabilize the water quality. Some scholars have found that *Bacillus megaterium* can effectively decompose phosphorus and promote the circulation of phosphorus in water. It has been reported that *Bacillus amyloliquefaciens* can improve water quality in different stages of aquaculture. All these indicate that the application of microecological preparation is better.

With the development of microbial research and development technology, many kinds of preparations have entered the market, such as Vegamax products, active-water, active-pond, active-vibro, etc. Through effective cultivation, the synergistic effect of these preparations can be exerted, the water quality can be improved, and the healthy growth of aquatic animals can be benefited.

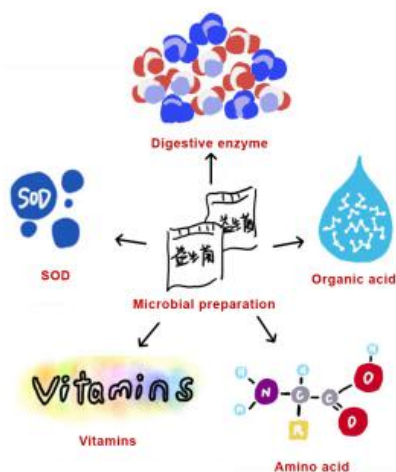


2. Microecological preparation as additive

Adding microecological agents to feed can improve the microbial flora in the body and fundamentally control the occurrence of diseases. At present, microecological preparations have been widely used in aquaculture at home and abroad.

● → Regulate intestinal flora.

Microbial agents promote the formation of beneficial flora in the intestinal tract of aquatic animals. These flora are easy to survive and reproduce, and can quickly and stably occupy the ecological position, form dominant flora, and compete with pathogenic microorganisms for adhesion sites, chemicals and available energy.

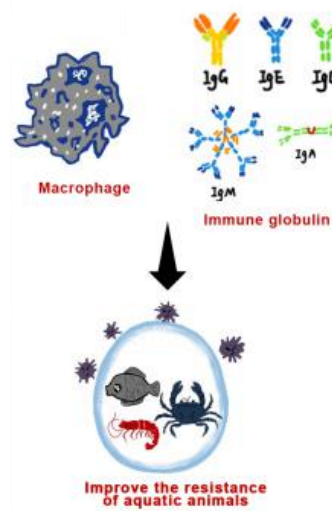


● → Regulate organism physiology.

Microorganisms can produce digestive enzymes such as amylase, protease and lipase, which are beneficial to the digestion and absorption of feed; A variety of nutrients, such as vitamins and amino acids, are produced in the intestinal tract of aquatic animals, which participate in the metabolism of the body. The organic acids produced can promote the absorption of minerals and promote the growth of aquatic animals. At the same time, some enzymes, such as amino oxidase and superoxide dismutase, are produced, which can reduce the generation of harmful substances in the body, achieve the purpose of detoxification and provide guarantee for the healthy growth of aquatic animals.

● → Enhance immunity of organism.

Microbes can affect the intestinal mucosa hemolymph of aquatic animals, produce interferon, increase macrophage activity and immunoglobulin concentration, enhance humoral immunity and cellular immunity, and prevent diseases of aquatic animals. Studies have shown that individual probiotics can be used as non-specific immunoregulatory factors to regulate the normal operation of gene flow, energy flow and material flow in micro-ecosystem.

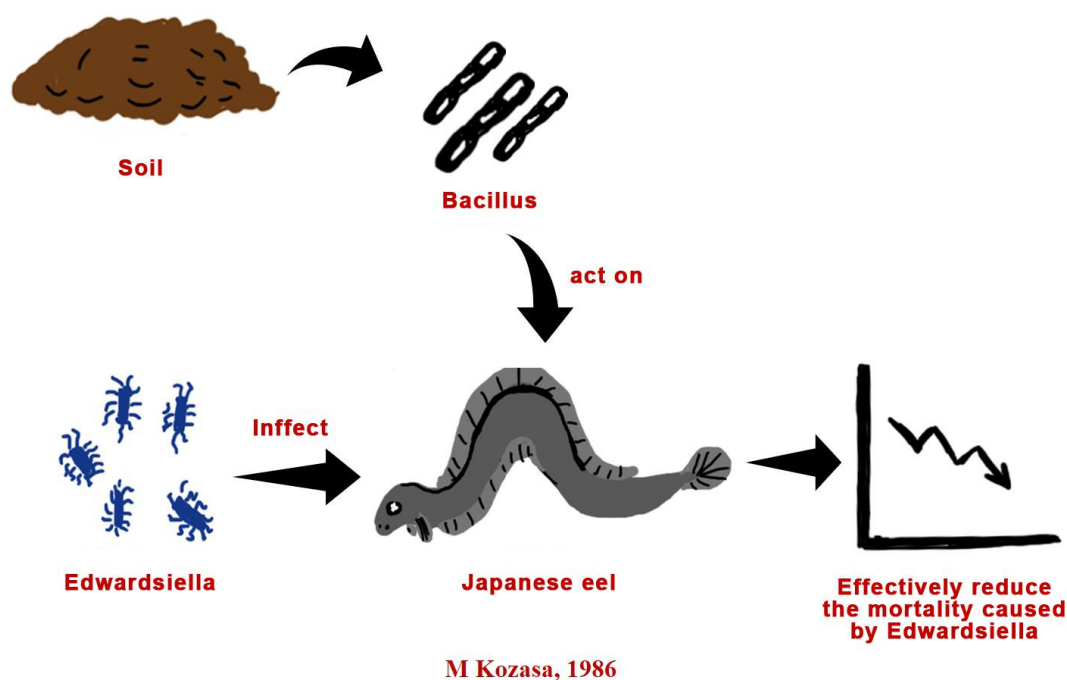


3. Replace antibiotics to prevent and treat diseases

The side effects of antibiotics in aquaculture and the disadvantages such as drug resistance, toxicity, teratogenicity, carcinogenicity and mutation of pathogenic

bacteria have been revealed. With the wide application of microecological preparation in livestock and poultry, people pay more and more attention to its application in aquaculture, and its good effect has been confirmed by a large number of experiments and production practices. Microecological preparations have the characteristics of versatility and wide adaptability, and are used for disease prevention and control of aquatic animals.

In 1986, Kozasa applied probiotics to aquaculture, and treated Japanese eel with a strain of *Bacillus* isolated from soil, which reduced the mortality caused by *Edwardsiella*. Since then, the research on the application of microecological agents in preventing and treating diseases in aquaculture has developed rapidly. It has been reported that *Bacillus subtilis* and *Bacillus licheniformis* can effectively control the proliferation of white spot virus in *Litopenaeus vannamei*. Some scholars have confirmed that *Clostridium butyricum* can effectively reduce the proliferation of fish intestinal pathogenic bacteria (*Edwardsiella tarda*, *Vibrio anguillarum* and *Aeromonas hydrophila*).



4. Cultivate seedlings

Compared with adult fish culture, fry culture has more stringent requirements on water quality of culture water. Especially, dissolved oxygen index, water temperature index, pH index, ammonia nitrogen index and nitrate index in water will have great influence on the growth of seedlings. The smaller the seed, the less the ability to resist hypoxia, and the lower the immunity. Once it is attacked by the outside world, it will have no resistance. In this case, the micro-ecological preparation can be spilled into the water, and the residual substances in the water can be decomposed by the micro-ecological preparation, so as to strengthen the control of ammonia nitrogen, harmful bacteria and other substances in the water, improve the water environment and provide guarantee for the healthy growth of seedlings.



Carp seedling

Penaeus vannamei seedlings

Chinese velvet crab seedlings

Vegamax has studied probiotics for more than 20 years, with 829 reserved strains and 236 preserved strains. In order to adapt to the specific breeding environment for aquatic animals, special strains for aquatic products such as *Bacillus subtilis*, *Lactobacillus plantarum*, *Clostridium butyricum*, *Bacillus megaterium*, *Bacillus amyloliquefaciens* and *Bacillus licheniformis* were screened to protect the health of aquatic animals. Combined with Vegamax's excellent production line of probiotic liquid fermentation and solid fermentation, and the innovative process of MVR low-temperature concentration, the metabolites are retained as much as possible, and the microecological preparation produced is of course visible in effect, good in quality and trustworthy in brand!

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